



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,913	01/17/2001	Patrick Edward Feierabend		8186

7590

12/10/2003

JOHN S. FOSTER
4678 VIA HUERTO
SANTA BARBARA, CA 93110

EXAMINER

COLEMAN, WILLIAM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 12/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/764,913

Applicant(s)

FEIERABEND ET AL

Examiner

W. David Coleman

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
4a) Of the above claim(s) 14-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-5,7 and 13 is/are rejected.
- 7) ☒ Claim(s) 3,6 and 8-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4, 5, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gooch et al., U.S. Patent 6,521,477 in view of Spooner et al., U.S. Patent Application Publication No.: 2002/0081816 A1.

Gooch discloses a semiconductor process substantially as claimed. See **FIGS. 1-14** where Gooch teaches a method for constructing an array of MEMS devices, comprising the steps of: dicing a MEMS wafer to separate individual dies from the MEMS wafer (column 1, lines 28-30); placing the die in a holder (column 7, lines 5-10); bringing the die in said holder into proximity to a second wafer; adjusting the orientation of the die relative to the second wafer. However, Gooch fails to teach then connecting said die onto said second wafer. Spooner teaches connecting individual dies onto a second wafer. See **FIGS. 1-42** where Spooner teaches connecting a MEMS die to a wafer **21** as seen in **FIG. 4**. In view of Spooner, it would have been obvious to one of ordinary skill in the art to incorporate the process steps of Spooner into the Gooch semiconductor process because a wafer cap protects micro electromechanical system structures during dicing (see Abstract).

3. Pertaining to claim 2, Gooch in view of Spooner teaches the method of claim 1, further comprising the step of:

rotating said die out of the original plane of fabrication, before connecting to said second wafer (since MEMS are fabricated on a major surface of a wafer, aligning is equivalent to rotating).

4. Pertaining to claim 4, Gooch in view of Spooner teaches the method of claim 1, further comprising the step of: connecting said die electrically to said second wafer.

5. Pertaining to claim 5, Gooch in view of Spooner teaches the method of claim 1, further comprising the step of applying heat to a contact area between said die and said wafer, in order to cure a bonding adhesive (hence, solder is the bonding adhesive in this case, column 6, lines 15-63).

6. Pertaining to claim 7, Gooch in view of Spooner teaches the method of claim 5, further comprising the step of:
packaging the array in a eutectic seal.

7. Gooch in view of Spooner discloses a semiconductor process substantially as claimed.

Gooch in view of Spooner teaches a method for constructing an array of MEMS devices, comprising the steps of:

dicing the MEMS wafer to separate individual rows from an original fabrication wafer;

placing the row in a holder;

bringing the row in said holder into proximity to a second wafer;

adjusting the orientation of the row relative to the second wafer, and connecting said die onto said second wafer. However, Gooch fails to teach the step of selecting from the row, a set of contiguous devices within the row, discarding from the row the devices not selected. These steps appear to mental steps as far as a selecting and discarding because Applicant's claim provides no logical reasoning to select and discard and is therefore a random process. In view of Gooch, it would have been obvious to one of ordinary skill in the art to randomly select and discard a MEMS die because MEMS devices are fragile especially after dicing (column 1, lines 36).

Objections

8. Claims 3, 6 and 8-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

10. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 2823

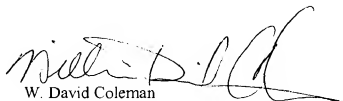
however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004.

The examiner can normally be reached on 9:00 AM-5:00 PM. After February 4, 2004, I can be reached at 571-272-1856

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

13. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

A handwritten signature in black ink, appearing to read "W. David Coleman", is written over a horizontal line.

W. David Coleman
Primary Examiner
Art Unit 2823

WDC